OXYGEN-ASSISTED FERMENTATION PROCESS

ABSTRACT OF THE DISCLOSURE

A fermentation process uses substantially pure oxygen. The oxygen is the only reactive gas which is injected into a fermentation vessel. The oxygen is moved through the vessel solely by its own pressure. The process can be used with both mechanically-agitated and air-lifted fermenters. The mechanically-agitated fermenter includes an analyzer for measuring oxygen concentration in the exhaust line, and adjusting the flow of fresh oxygen into the vessel accordingly. In the air-lifted fermenter, an analyzer measures the oxygen concentration in the head space of the vessel, and operates valves which either recycle the gas from the head space, or vent that gas to the outside, according to the measured concentration. A stream of nitrogen is periodically injected into the vessel to drive out carbon dioxide and other gases, to control the pH of the fermentation medium. The present invention substantially improves the efficiency of a commercial fermentation process.